

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Drawings

The Office Action objected to the drawings under 37 CFR 1.83(a) on the grounds that the drawings fail to show the subject matter claimed in claim 18. Claim 18 is cancelled and the objection is traversed.

Claim Rejections – 35 USC § 112

The Office Action rejected claim 18 under 35 USC § 112, first paragraph, for containing subject matter which was not described in the specification. Claim 18 is cancelled and the rejection is overcome.

Claim Rejections – 35 USC § 102

The Office Action rejected claims 1-3 under 35 USC 102(b) as being anticipated by Bramanti in United States Patent No. 4,675,615. Claim 1 is amended to include the novel arrangement of magnetic pole pieces positioned between the first and second layers of magnetic conductive materials and the respective first and second permanent magnetic pieces, as claimed in claim 4. Bramanti neither teaches nor suggests such an arrangement and the rejection of claims 1-3 is traversed.

Claim Rejections – 35 USC § 103

Claim 4 is cancelled without prejudice.

Claims 5-13 were rejected under 35 USC 103(a) as being unpatentable over Asaoka in United States Patent No. 5,926,083. Reconsideration is requested.

Claim 5 is amended to include the novel subject matter of claim 10. Claim 5 therefore now claims at least one pole piece attached to a periphery of said first and second toroidal ferromagnetic pieces.

In the rejection of claims 5-13, the Office Action incorrectly characterizes the cores 3 of Asaoka as pole pieces "disposed around" the periphery of the first and second toroidal elements. This is an incorrect interpretation of the cited references for at least the following reasons:

1) Claim 5 as amended and claim 10 as originally filed called for at least one pole piece **attached to a periphery of said first and second toroidal ferromagnetic pieces**. Asaoka teaches a second core 3 made of a soft magnetic material having a high permeability with high initial, maximum, and other permeability levels, high residual flux density and saturation magnetization, and small coercive force, thus making effective use of the flux of the magnetic path for power generation. (column 3, lines 38-43).

2) Each core 3 is spaced from the ferromagnetic core pieces 1 and 2 by a gap "G" that forms an open magnetic path consisting of permanent magnet 1, part of first core 2, permanent magnet material and a second core 3" (column 6, lines 10-13).

Asaoka therefore fails to teach or suggest the invention claimed in the amended claim 5 and the rejection of claims 5-7 and 11-13 is thereby traversed.

Claim 8 is amended and placed in independent form. The Office Action expressed the position that the specific arrangement of permanent magnets and pole pieces would have been an obvious design consideration for the purpose of controlling magnetic flux. Applicant respectfully disagrees. Permanent magnetic core devices used as transformers, chokes or in current limiting circuits although constructed of a few basic components, are extremely complex electro-magnetic systems with properties that are not readily predictable. As evidenced by the prior art, there are no obvious design considerations and even minor variations in component composition or structural arrangement can produce unexpected results. None of the cited references teach or suggest the structure claimed in amended claim 8 and it is respectfully submitted that amended claim 8 is novel and non-obvious. The rejection of claim 8 is thereby traversed.

Claims 9 and 10 are cancelled and the rejection of claims 9 and 10 is traversed.

Claims 11-13 depend from amended claim 5 and, for reasons set forth above, the rejection of claims 11-13 is traversed.

Accordingly, of the claims 5-13 that were rejected under 35 USC 103(a), claims 5-8, 12 and 13 are now amended, while claims 9 and 10 are cancelled without prejudice. Claims 5-18, 12 and 13 are believed to be patentable over Asaoka under 35 USC 103 for the above-indicated reasons.

Regarding claims 14-20, claim 14 is amended to claim that the permanent magnet sets respectfully comprise permanent magnet pieces with magnetic poles pieces positioned between the permanent magnet pieces and the first and second core structures. For reasons explained above, this structure is neither taught nor suggested in the prior art made of record. Claim 14 as amended defines novel and non-obvious subject matter.

Bramanti does not disclose or suggest a device such as claimed.

Although the Office Action takes the position that Tominaga et al. disclose a core structure comprising a plurality of core elements, a plurality of permanent magnets [4a] and a plurality of poles pieces [6] **supporting** the permanent magnets, it is respectfully pointed out that Tominaga et al. teach a permanent magnet 4 having a back surface on which a back yoke is arranged to bridge the outer surface of the back surface of each magnet 4 (column 4, lines 46-48). Consequently, the yoke of Tominaga et al. is positioned over an outer surface of the permanent magnet 4, and not located between the permanent magnet 4 and the magnetic core material as claimed in amended claims 1 and 14.

As noted above, claim 18 is canceled and the rejection under 35 USC 112 is overcome.

Claims 6, 7, 11-13, 15-16 and 19-20 are amended to remove reference numbers and correct minor typographical errors.

In view of the cancellation of claims 4, 9-10 and 18, as well as the amendment of claims 1, 5-8, 11-16 and 19-20, all claims that remain pending in this application are believed to be in condition for immediate allowance.


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Our check in the amount of \$43.00 to cover the fee for one additional independent claim is enclosed. Please charge any additional fees or credit any overpayment to our Deposit Account No. 15-0508.

Favorable reconsideration and early issuance of a Notice of Allowance are therefore solicited.

Date: May 24, 2004

Respectfully submitted,


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CERTIFICATE OF MAILING

I hereby certify that this paper and any enclosures are being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on May 24, 2004.


Michael A. Hierl